S. R. S. Doc. 50. A. I.–3.

U. S. DEPARTMENT OF AGRICULTURE,

STATES RELATIONS SERVICE.

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FOOD REQUIREMENTS OF THE HUMAN BODY.[1]

SUGGESTIONS FOR TEACHERS IN SECONDARY SCHOOLS.

INTRODUCTION.

The present high cost of food materials is the cause of a general interest in the economical use of human food. Before we can approach efficiency in the selection and use of foods, we must understand some of the basic principles which underlie the food requirements of human beings. Although much may be done to make this principle clear to adults, the subject, to have a far-reaching effect, should be taught to a greater number of students in our public schools. Surely there is no subject more important than the human body and its needs. We should give at least as careful a consideration in our schools to problems which arise in the feeding of the human family as we do the feeding of live stock. A series of bulletins on How to Select Foods should be welcomed by teachers as well as housewives.

RELATION OF SUBJECT TO CURRICULUM.

A phase of home economics.—Although a study of the food requirements of the human body may involve technical questions beyond the reach of secondary students the elementary principles may be made sufficiently clear to form a basis for a course in cooking. The subject should be dealt with in a more exhaustive manner in a course in dietetics. Either a class in cooking or a class in dietetics will find in the bulletin applications of principles with detailed suggestions for practical work.

Relation to physiology and general biology.—Progressive teachers of human physiology, whether they are teaching the subject as an independent course or as a phase of general biology, are making every effort to bring the subject into direct connection with the present-day needs of the students. A consideration of the food requirements of the body will have much more meaning when translated in terms of food materials found on the market and which are being used by the students daily. In connection with a study of human nutrition, classes in physiology may devote several lessons

[1] Based upon Farmers' Bulletin 808, How to Select Food.—I, What the Body Needs. Prepared by H. P. Barrows, Specialist in Agricultural Education, under the direction of C. H. Lane, Chief Specialist in Agricultural Education, States Relations Service.

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profitably to a discussion of the question, How to select foods, as discussed in Farmers' Bulletin 808.

A part of the course in general science.—Courses in general science are becoming more and more popular as a means of meeting the needs of students entering the high school. The most successful teachers of general science are fitting the course to meet the needs of the local community as well as adapting it to meet the needs of the students.

Inasmuch as a study of the food requirements of the human body involves a number of the sciences and has a direct relation to the students and their present-day needs, it makes an excellent subject to consider in a general science course.

Correlations.—If the girls are studying human nutrition in home economics at the same time they are taking a course in physiology, there should be close cooperation between the teachers with a view of correlating the subjects. In the main the principles should be learned in the physiology class and applied in home economics. Likewise there will be opportunities in home economics for the application of other phases of biology and chemistry, whether learned in a special course or in the course in general science. If the boys are studying the general principles of nutrition in their course in animal husbandry, there should be little difficulty in applying those principles to human nutrition in one of their science courses. The teacher should know what other subjects his students are taking and have taken in order that there may be effective correlation without wasteful duplication. The courses the students have had and their age and capacity will determine largely the way the subject is handled. An understanding of the nutritive value of food based on energy values and the working out of nutritive meals, which will be comparatively simple to students who have had some physics, may be technical enough to discourage younger students. The application of principles as brought out in the bulletin should be within the reach of all high-school students.

CLASSROOM INSTRUCTION.

Use of reference material.—Special courses in home economics dealing with the general principles of nutrition or with the preparation of foods may be based upon somewhat extensive outlines with texts and references. In connection with such courses, Farmers' Bulletin 808, How to Select Foods—I, What the Body Needs, will be welcomed as an additional reference to aid in making a somewhat technical subject clear to younger students as well as for the practical suggestions given. This bulletin may very well be made the basis for the consideration of the subject, given in connection with physiology or general science as suggested. If the students are able to go more

deeply into the subject, or if there is time to treat any phase of the subject more extensively, an abundance of reference material is available. A list of department publications on related subjects is given at the end of this document. These other bulletins may be used to adapt the work to the needs and interests of individual students. A student interested in dairying may make a special report on milk as food, or a student whose interests are in connection with horticulture may be assigned a bulletin on the use of fruit as food or upon the food value of potatoes. Where there is not time for these reports to be given orally, written reports to the teacher may be required. The school should keep a file of these bulletins for reference use, and should encourage students to make individual collections of the bulletins in which they have a special interest.

Use of illustrative material.—In visualizing lessons on food requirements the blackboard may be used to good advantage in showing the relative composition of foods in a graphic way. Suggestions for such graphs may be obtained from the reference material. A series of 15 colored charts showing the composition of foods may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for $1. These charts have proved very helpful in connection with the teaching of foods and nutrition.

Although the students may secure some idea of the food for various family requirements from the lists given, a more lasting impression will be given from such illustrations as those contained in the bulletin. A still better impression will be given if the actual food materials all illustrated are placed before the students.

Sequence of subject matter.—With beginning students it will be well to approach the subject in an inductive manner as the topics are discussed in the bulletin. Beginning with concrete material as discussed under the heading, "The Day's Food," the more abstract principles of food requirements are approached through the topics, "What the Day's Food Should Provide," and "Grouping Foods to Show Their Uses." The latter topic is essentially a discussion of the composition of foods.

Students who have had some chemistry and physiology may begin with the composition of food and the needs of the human body in nutrition and then show the application of the principles as involved in working out meals for the family.

PRACTICAL WORK.

School practicums.—Classes in home economics will doubtless have a kitchen and dining room in which meals may be prepared and served. In the more advanced courses in cooking each of the girls should have opportunity to plan and prepare meals on her own

responsibility. Such work not only gives practice needed in connection with preparation and serving, but also furnishes the final test as to whether the principles of food selection have been grasped. Whether it is possible to give the actual practice in preparing meals or not, abundant practice should be given in the planning of meals. It is preferable to have most of this work that of individual members to be criticized by the class as a whole.

The sample meals given on page 6 of the bulletin may be considered suggestive. They may be modified to meet the needs of a family of different size or adjusted to meet market conditions. It will be well to assign problems to individual students to work out meals for various purposes and then have them criticized by the class in the light of what the bulletin suggests.

Home practicums.—In connection with science classes or classes in home economics which do not have equipment adequate for practice for all an effort should be made to link the practical work of the home with the instruction given at school. The menus planned at school may be prepared and served at home. An accurate record of the work done and the materials used, with costs, should be kept and a report made to the class. Such home practicums may very well supplement the practice work at the school, as the home work is done under the conditions of actual life. Girls who do not have charge of the home cooking may help their mothers in taking advantage of the suggestions of the bulletin.

A school project.—In a number of schools more extensive practice is given for the class as a whole, such as preparing and serving meals regularly for members of the faculty or others. In a Virginia school the class in home economics prepares a luncheon regularly for the members of the local farmers' institute in connection with their monthly meetings. Even some small schools having no regular kitchen equipment and making no attempt to give a definite course in home economics are securing good results in the preparation of school lunches for students. For directions for the preparation of these lunches see Farmers' Bulletin 712, School Lunches.

A home project.—If there is opportunity for any members of the class to take hold of the selection of food for the family at home in such a manner that the work may be planned and carried out in a definite way in connection with the work at school, school credit should be given for this work according to its educational value. To have such educational value the work should present problems new to the student; it should involve a definite plan and the keeping of accurate records and accounts; with a written report of the work done; and should have the supervision of the teacher or some other competent person.[1]

COMMUNITY SERVICE.

Although a permanent foundation for greater economy and efficiency in the feeding of the human race may be laid best by teaching the subject in the schools there is a pressing need at the present time to take information concerning the selection of foods direct to the adult consumer. Teachers of home economics and related science who have the spirit of community service are doing a good deal to aid school patrons and others interested in lowering the cost of living. Some teachers have organized classes for adults in which the selection and preparation of food is taken up in a practical way. Others have given public lectures and demonstrations. As a rule demonstrations are more interesting and profitable than lectures. Lectures accompanied by lantern slides or charts may be made interesting and profitable, however. The bulletin may very well furnish the material for the beginning number of a series of lectures on How to Select Foods. The concrete food materials arranged to meet different needs as shown in the illustrations of the bulletin will help to illustrate such a lecture.

Any community service in which the students take part has a double value as it gives practice to the students and helps to develop within them a social spirit. In connection with the work in home economics an exhibit of food materials, equipment, and methods of preparation at the school should be helpful in arousing interest in the community. Each member of the class should be assigned some demonstration or given some other active part in such an exhibit.

[1] The following department bulletins, while they deal with problems of teaching agriculture, may be suggestive to teachers of home economics and other sciences: 346, Home Projects in Secondary Courses in Agriculture, and 385, School Credit for Home Practice in Agriculture.

PUBLICATIONS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE PERTAINING TO FOODS AND THEIR PREPARATION.

AVAILABLE FOR FREE DISTRIBUTION BY THE DEPARTMENT.

Title.	Publication.
Meats: Composition and Cooking	Farmers' Bulletin 34.
Beans, Peas, and Other Legumes as Food	Farmers' Bulletin 121.
Principles of Nutrition and Nutritive Value of Food	Farmers' Bulletin 142.
Canned Fruits, Preserves, and Jellies	Farmers' Bulletin 203.
Cereal Breakfast Foods	Farmers' Bulletin 249.
Preparation of Vegetables for the Table	Farmers' Bulletin 256.
Evaporation of Apples	Farmers' Bulletin 291.
Use of Fruit as Food	Farmers' Bulletin 293.
Food Value of Corn and Corn Products	Farmers' Bulletin 298.
Canning Vegetables in the Home	Farmers' Bulletin 359.
The Use of Milk as Food	Farmers' Bulletin 363.
Care of Food in the Home	Farmers' Bulletin 375.
Bread and Bread Making	Farmers' Bulletin 389.
Economical Use of Meat in the Home	Farmers' Bulletin 391.
Canning Peaches on the Farm	Farmers' Bulletin 426.
Canning Tomatoes at Home and in Club Work	Farmers' Bulletin 521.
Mutton and Its Value in the Diet	Farmers' Bulletin 526.
Sugar and Its Value as Food	Farmers' Bulletin 535.
Pop Corn for the Home	Farmers' Bulletin 553.
Uses of Corn, Kafir, and Cowpeas in the Home	Farmers' Bulletin 559.
Corn Meal as a Food and Ways of Using it	Farmers' Bulletin 565.
Production of Clean Milk	Farmers' Bulletin 602.
Home Manufacture and Use of Unfermented Grape Juice	Farmers' Bulletin 644.
Honey and Its Uses in the Home	Farmers' Bulletin 653.
School Lunches	Farmers' Bulletin 712.
Food for Young Children	Farmers' Bulletin 717.
How to Select Foods. I. What the Body Needs	Farmers' Bulletin 808.
Bread and Bread Making	Farmers' Bulletin 807.
Food Value and Uses of Poultry	Dept. Bulletin 467.
Potatoes, Sweet Potatoes, and Other Starchy Roots as Food	Dept. Bulletin 468.
Eggs and Their Value as Food	Dept Bulletin 471.

FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS.

Title.	Publication.	Price.
Fish as Food	Farmers' Bulletin 85	$0.05
The Food Value of Beans	Farmers' Bulletin 169	.05
Meat on the Farm: Butchering, Curing and Keeping	Farmers' Bulletin 183	.05
Durum Wheat for Macaroni and Bread Making	Farmers' Bulletin 251	.05
Digestibility of Fish and Poultry	Farmers' Bulletin 276	.05
Cooking Cereal Foods	Farmers' Bulletin 316	.05
Nuts and Their Uses as Foods	Farmers' Bulletin 332	.05
Cooking Beans and Other Vegetables	Farmers' Bulletin 342	.05
Jelly and Jelly Making	Farmers' Bulletin 388	.05
Market Classes and Grades of Meat	Farmers' Bulletin 435	.05
The Utilization of Dairy By-Products as Food	Farmers' Bulletin 486	.05
Cheese and Its Economical Uses in the Diet	Farmers' Bulletin 487	.05
Uses of the Sweet Potato	Farmers' Bulletin 517	.05
Extension Course in Vegetable Foods	Department Bulletin 123	.10
Studies on Fruit Juices	Department Bulletin 241	.05
Fats and Their Economical Use in the Home	Department Bulletin 469	.05

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917